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Chen et al.(10) **Pub. No.: US 2021/0302433 A1**(43) **Pub. Date: Sep. 30, 2021**(54) **METHODS FOR CHARACTERIZING
LOW-ABUNDANCE HOST CELL PROTEINS****Publication Classification**(71) Applicant: **Regeneron Pharmaceuticals, Inc.**,
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Ning Li, New Canaan, CT (US)(21) Appl. No.: **17/217,518**(22) Filed: **Mar. 30, 2021****Related U.S. Application Data**(60) Provisional application No. 63/001,690, filed on Mar.
30, 2020, provisional application No. 63/031,336,
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(2013.01); **G01N 2458/15** (2013.01)(57) **ABSTRACT**

The present application provides methods and systems to identify host cell protein (HCP) impurities in a sample containing high-abundance proteins. The HCP impurities can be enriched using interacting peptide ligands which have been attached to solid support. The HCP impurities can be eluted from the solid support using solution containing phase transfer surfactants. The isolated HCP impurities can be digested to generate components of the isolated HCP impurities which can subsequently be identified using a mass spectrometer.

